ESTABLISHMENT OF *VESPULA GERMANICA* (FABRICIUS) (HYMENOPTERA: VESPIDAE) IN NEW SOUTH WALES

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Abstract

The establishment of *Vespula germanica* (Fab.) in the Sydney area is confirmed and its distribution given. Its status in New Zealand and its potential economic importance in Australia are indicated.

Smithers and Holloway (1977) recorded two worker specimens of the European wasp, *Vespula germanica* (Fab.) from Sydney. The discovery of these specimens, in June 1975 and February 1977, led to an attempt to ascertain whether the species was established and breeding. This paper reports on nests discovered in the Sydney area and briefly summarizes the status of the species in some other areas which it has colonised.

Western Australia:– A few nests of *V. germanica* were found within an 8 km radius of Fremantle in 1977 (Anonymous 1977). It is believed that these were destroyed; no further reports have been published.

Tasmania:– *V. germanica* was first found in Hobart in 1959; it is now known to be widespread in Tasmania where it is considered the most troublesome outdoor pest in urban situations; robbing of bee hives has been reported Anonymous (1975).

New Zealand:– Thomas (1960) discussed the introduction, spread, seasonal activity, colony development and economic significance of the species in New Zealand where it was first found at Te Rapa in 1945. By 1952 it was known to occur over much of North Island. Fordham (1962) recorded it as being present in Christchurch (South Island) by 1952 and widespread in New Zealand by 1962. It was responsible, by 1952, for some damage to fruit in orchards and vineyards and had been noted as destroying colonies of bees in apiaries as well as being a nuisance through stinging. It was subsequently considered to be of sufficient economic importance for serious attempts to be made to devise control measures (e.g. Perrott 1975). Walton and Reid (1976) have published results of a survey carried out during the 1974/75 season which revealed that 1.9% of bee colonies (3,900 hives) in commercial and semicommercial apiaries were destroyed and 4.9% (10,000 hives) seriously affected. The damage was estimated to involve a loss of some $134,000, not including costs of searching for and destroying nests nor preventative measures taken in apiaries and honey houses. During the same period American Foul Brood disease destroyed 0.44% of bee colonies.

New South Wales:– Active nests so far discovered in the Sydney area are listed in Table I. All except one (Mosman) are south of the Parramatta River and Port Jackson; most are in the George's River area. This indicates occupation of an area at least from just south of the George's River to just north of Sydney Harbour. The known nest distribution (Fig. 1) suggests a concentration of the population near the George's River (which might represent the area of original establishment), with lower populations elsewhere (possibly indicating the zone into which the species has spread). This indication of distribution, however, may be false as discovery of the first nest in Oatley received publicity in the local press in that and

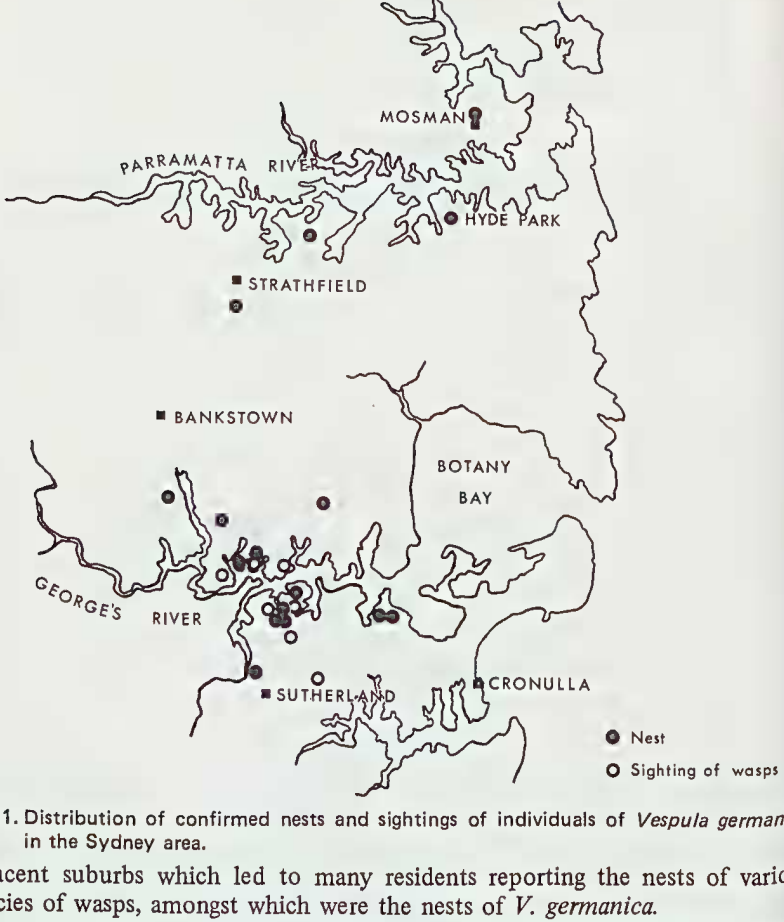

Fig. 1. Distribution of confirmed nests and sightings of individuals of *Vespula germanica* in the Sydney area.

adjacent suburbs which led to many residents reporting the nests of various species of wasps, amongst which were the nests of *V. germanica.*

Table II lists confirmed records of individuals, including the two previously recorded specimens (marked by an asterisk). Their distribution pattern follows closely that of the known distribution of nests except for the Turramurra specimen which may have been a direct introduction from New Zealand (Smithers & Holloway 1977). A baited trap in that area did not attract more specimens.

Most nests have been found in protected situations (see Table I); this is usual for this species in Europe but in New Zealand some large colonies have developed in more open places and some have continued to be active through winter to produce excessively large colonies. The European colonies usually die out in winter after producing fertile queens which hibernate and emerge to found new colonies in spring. The cycle under Sydney conditions is not known but one hibernating queen has been found under a piece of timber (at Gymea) and one colony is known to have died out naturally with the onset of cold weather (Hyde Park). At the time of writing (July 1978) foraging activity by workers which was obvious in Hyde Park appears to have ceased.

These observations suggest that some colonies at least, are following the typical European activity cycle.

Descriptions of *V. germanica* and a discussion of its biology are given in Spradbury (1973) and Thomas (1960). A typical carton nest, after removal from a cavity in a palm tree, is shown in Fig. 2.

We are anxious to obtain all available records of the occurrence of *V. germanica* and will be pleased to confirm identification of specimens.

Discussion

Although there are no reports as yet from Australia of serious economic impact by *V. germanica* the experience in New Zealand is probably a good indication of what might be expected to occur here in future. Large numbers

TABLE I

Locality	Date	Observer	Nest site
Oyster Bay	May 1978	N. Campbell	Nest in tree stump, 1 m. This subsequently knocked to ground. Small nest started on ground below site of old nest.
Oyster Bay	April 1978	G. Coleman	Nest in ground. Fumigated and removed.
Kareela	May 1978	G. Prosser	Nest in ground below sandstone rock. Destroyed by fire.
Kareela	April 1978	M. Brennan	Nest in ground. Removed by fire.
Oatley West	April 1978	Ms Dyer	Nest in ground below sandstone rock. Fumigated.
Oatley	March 1978	J. Keating	Nest behind sandstone retaining wall in soil. Fumigated and removed.
Peakhurst	March 1978	Mr Bastsch	Nest 6 m above ground level in longicorn damage of *Eucalyptus* sp. (Adult wasps removed in flight by 2 Spangled Drongos and nest removed by 2 Galahs.
Woronora	April 1978	B. Crouch	Nest situated in ground between 2 sandstone rocks. Destroyed by fire.
Sylvania Waters	March 1978	J. McGann	Nest in house wall cavity. Destroyed by fumigation.
Taren Point	March 1978	Mrs Keen	Nest in cavity ceiling of shed.
Padstow	May 1978	R. Taylor	Nest behind fascia board in roof of house.
Hurstville	May 1978	D. Armstrong	Nest in earthen bank behind brick retaining wall. Destroyed by fumigation.
Enfield	April 1978	Mrs McKinnon	Small nest in carpet roll in garage. Destroyed by fumigation.
Enfield	April 1978	Mrs McKinnon	Nest in brick gate post.
Drummoyne	May 1978	A. Dibley	Nest in wall cavity of house.
Hyde Park	March 1978	C. Smithers	Nest in cavity between the frond bases of the palm *Phoenix caniensis.* Removed on 21 June after desertion of the nest by the wasps. An older nest in the open approx. 0.6 m lower than above nest had been knocked down at some earlier date.
Mosman	May 1978	Mrs Parie	Nest in palm, *Phoenix caniensis.* Removed.

TABLE II
Records of individuals of *V. germanica* in Sydney area

Locality	Date	Observer	Remarks
Kirrawee	March 1978	Mrs Biddolph	1 worker captured.
Kirrawee	April 1978	Mr Williamson	5 - 6 adults flying around flowers of banana tree.
Oyster Bay	March 1978	Mrs Harkness	3 workers observed on grapefruit tree.
Oyster Bay	May 1978	Mrs Mathews	1 worker captured
Lugarno	March 1978	Mrs Clark	1 worker captured
Oatley	March 1978	M. Rock	Several adults flying
Oatley	March 1978	P. Newbury	Large numbers of wasps observed flying around beehives.
Gymea	June 1978	W. Wilson	1 queen hibernating under timber
*William St, Sydney	June 1975	D.K. McAlpine	1 worker found dead on pavement
*Turramurra	Feb. 1978	A.S. Smithers	1 worker in house

Fig. 2. Carton nest of *Vespula germanica* after removal from cavity in palm tree, showing tiers of cells joined by narrow columns. Outer covering of nest partly removed.

have already been observed in the vicinity of one apiary at Oatley. Apart from any direct economically undesirable activities, *V. germanica* is a predatory species, feeding its larvae on insects and although it may take pest species as part of its food any suggestions that it may be a "beneficial" insect are based on an unwarranted oversimplification of ecological systems and are not valid; the arrival of such a pugnacious, persistent, numerous and general predator into Australian ecosystems is an unfortunate event.

Acknowledgements

We would like to thank Dr R. J. Hardy, Dr E. W. Valentine and Dr K. Richards for information on *V. germanica* in Tasmania, New Zealand and Western Australia, Mr M. Casimir for making field assistance available, Dr B. Dominiac for help in the field, Dr K. Lindsey for arranging for records to be provided to the Museum, Mr John Fields for the photograph and Ms L. Lawrie for providing fumigant materials. The observers responsible for reporting nest and specimens on which this note is based are thanked for their cooperation.

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BOOK REVIEW

Standard names for common insects of New Zealand: compiled by a committee under the chairmanship of D. N. Ferro. 1977. Entomological Society of N.Z. 42 pages. Price NZ $2.00. Available from the Society, c/- Mrs B.M. May, 60 Ocean View Rd, Huia, N.Z.

The primary purpose of this book is summarised in its preface: ". . . to standardise those common names of economically important terrestrial invertebrates and other species commonly encountered." As Bulletin No. 4 of the Society it replaces an interim list published in 1967 and is the counterpart of our Australian list (C.S.I.R.O. Bulletin No. 287).

Almost 1,000 names are included which are listed alphabetically in two sections, one by latin to common name, the other by common to latin name. Each is accompanyed by author citation and in the latin to common name section also by family and order. Common synonyms are cross referenced which adds to the value of the list.

I feel it is somewhat unfortunate that all hyphens have been omitted from the common names. Some rather unnatural words result; "New Zealand glowworm", "lightbrown apple moth" and "squareended cobweb spiders" are some examples. In other cases words have been separated but the decision to either join or separate does not appear to be consistant; on p. 24, for example, there is "big jawed orbweb spiders" followed by "bigheaded ant".

Many of the species included in the book have, at present, several commonly used names. By establishing this list a standard for communication is provided. For those working with New Zealand insects this book is a must; for others a useful asset.

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